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*Corrections applied to the Great Meridional Arc, extending from Latitude  $8^{\circ} 9' 38''$  to Latitude  $18^{\circ} 3' 23''$ , to reduce it to the Parliamentary Standard. By Lieutenant Colonel W. Lambton, F.R.S. and Corresponding Member of the Royal Academy of Sciences at Paris. Read January 9, 1823. [Phil. Trans. 1823, p. 27.]*

It appears from the investigations detailed in this paper, that with respect to a measurement on the meridian, the degree depending on Colonel Lambton's brass scale must be multiplied by the fraction  $\cdot 000018$ , and the product subtracted from the measure given by the scale to reduce it to the present parliamentary standard; and that the degree depending on Ramsden's bar must be multiplied by  $\cdot 00007$ , and the product added to the measure given by the scale to reduce it to the standard.

*On the Changes which have taken place in the Declination of some of the principal fixed Stars. By John Pond, Esq. Astronomer Royal, F.R.S. Read April 18, 1822. [Phil. Trans. 1823, p. 34.]*

The objects of this communication are chiefly two; the first is to restore a greater degree of confidence in the results of the late observations made with the mural circle at Greenwich, which now appear to have been subjected to a very small error only, arising from some temporary causes now very effectually removed; and the second to point out a want of uniformity in the proper motions of almost all the stars, which is of such a nature as to indicate a slow change of place towards the south in almost every instance, with the exception of  $\gamma$  Ursæ majoris,  $\beta$  Ursæ minoris, and  $\beta$  Cephei only. The greatest deviation is found in three very bright stars, Capella, Procyon, and Sirius. The proper motion of each of these is southward; hence these proper motions are accelerated, while that of Arcturus, on the contrary, may be considered as uniform.

The author observes, that though the number of stars which have proper motions northwards is nearly equal to those of which the proper motion is southward, yet the joint magnitude of the motions southward exceeds that of the motions directed northwards nearly in the proportion of 4 to 1.

It was not till after February, 1821, that the mural circle became completely out of repair; its present perfection has been verified by means of observations made with an artificial horizon of mercury protected by wooden boxes, of different sizes and figures according to the different altitudes of the stars: at the same time, Mr. Pond observes, that for very delicate purposes it would be improper to place implicit confidence in the observations of declination made in the course of the year 1820.